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| 09/603,184 | 06/26/2000 | Hirohisa Suzuki | 81784.0211 | 3365 |

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| EXAMINER |
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RAMOS FELICIANO, ELISEO

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| ART UNIT | PAPER NUMBER |
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2681

DATE MAILED: 08/15/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/603,184

Applicant(s)
SUZUKI et al.

Examiner
ELISEO RAMOS-FELICIANO

Art Unit
2681

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on May 22, 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1, 3-6 and 8-9** are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki (U.S. Patent Number 5,828,467).

Regarding **claim 1**, Suzuki discloses a noise cancel circuit (Figure 1) that includes an interpolation circuit (5) for performing interpolation processing on a detected radio signal (at 1) during generation of a pulse noise; the pulse noise portion is interpolated; see the abstract, Figure 1 and columns 6-7.

Regarding **claim 3**, Suzuki discloses everything claimed as applied above (see claim 1). In addition, the circuit further includes a noise detection circuit (2 and 4) for detecting the noise portion as claimed by applicant. The noise portion is interpolated by the interpolation circuit (5) according to an output signal from the noise detection circuit. See Figure 1.

Regarding **claim 4**, Suzuki discloses everything claimed as applied above (see claim 3). In addition, the circuit further includes a selection circuit (12) for selecting either the output signal from the interpolation circuit or the detected signal (via 9 and 8). See Figure 1.

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Regarding **claim 5**, Suzuki discloses everything claimed as applied above (see claim 4). In addition, interpolation is performed regardless of presence or absence of noise components. See Figure 1 and columns 1-4.

Regarding **claim 6 and 8-9**, Suzuki discloses everything claimed as applied above (see claim 5). In addition, the circuit further includes a first delay circuit (8) and a second delay circuit (7) as claimed by applicant. The delay time of the first delay circuit corresponds to a sum of the interpolation processing time and the delay time of the second delay circuit. This is to time-match the signal delay via both paths. See Figure 1 and citations above.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 2 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (U.S. Patent Number 5,828,467) in view of the knowledge generally available to one of ordinary skill in the art.

Regarding **claim 2**, Suzuki discloses everything claimed as applied above (see *claim 1*). However, even though Suzuki discloses interpolation, he does not specifically disclose spline-type interpolation as claimed.

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The type of interpolation is not relevant as accurate results are achieved. While many different types of interpolation can be applied, spline interpolation is conventionally known for accurate approximation.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to specifically apply spline interpolation to Arai et al.'s signal for the advantage of more accurate approximation and results.

Regarding **claim 7**, Suzuki discloses everything claimed as applied above (see *claim 6*). However, Suzuki fails to particularly disclose that the location of the second delay circuit is prior to (before) the interpolation circuit.

Since the function of the second delay circuit is to match-timing, its location is not relevant as long as timing match is achieved. Relocation of the delay circuit would be an engineering design choice.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to locate the second delay circuit prior to the interpolation circuit because of particular engineering design choice.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by

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another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. **Claims 1 and 3** are rejected under 35 U.S.C. 102(e) as being anticipated by Arai et al. (U.S. Patent Number 5,929,936).

Regarding **claims 1 and 3**, Arai et al. discloses a noise cancel circuit as depicted in Figure 2. The circuit includes an interpolation circuit 30 for performing interpolation processing on a detected radio signal. During generation of a pulse noise, a noise portion of the detected signal is interpolated, as depicted in Figures 6-10 and disclosed in the abstract and columns 3-5.

Noise detection is performed by a noise extracting unit (26, 29) in order to achieve noise reduction or cancellation. Therefore, the circuit also includes noise detection circuitry as claimed.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (U.S. Patent Number 5,929,936) in view of the knowledge generally available to one of ordinary skill in the art.

Regarding **claim 2**, Arai et al. discloses everything claimed as applied above (see *claim 1*). However, even though Arai et al. discloses interpolation (see Figures 3-10), he does not specifically disclose spline-type interpolation as claimed.

The type of interpolation is not relevant as accurate results are achieved. While many different types of interpolation can be applied, spline interpolation is conventionally known for accurate approximation.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to specifically apply spline interpolation to Arai et al.'s signal for the advantage of more accurate approximation and results.

Claim Rejections - 35 USC § 112

9. **Claims 4-9** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. **Claim 4** recites the limitation "a selection circuit for selecting either the output signal from said interpolation circuit or said detected radio signal" in lines 3-4. Since *claim 1* states that the detected radio signal is processed by the interpolation circuit, it is not clear how "said detected radio signal" is selected.

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Claims 5-9 are dependent on *claim 4*; therefore, they include the same problem explained above.

Response to Arguments

11. Applicant's arguments with respect to *claims 1-9* have been considered but are moot in view of the new ground(s) of rejection.

Citation of Pertinent Prior Art

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Matsumoto (U.S. Patent Number 5,630,217),

Young (U.S. Patent Number 6,424,154),

Wakabayashi (U.S. Patent Number 5,199,048),

All above disclose pertinent noise cancel circuits.

Conclusion

13. Any response to this Office action should be mailed to:
Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314

for formal communications intended for entry, informal communications or draft communications; in the case of informal or draft communications, please label "PROPOSED" or "DRAFT".

Hand-delivered responses should be brought to
Crystal Park II
2121 Crystal Drive
Arlington, VA
Sixth Floor (Receptionist).

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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eliseo Ramos-Feliciano whose telephone number is (703) 305-0078. The examiner can normally be reached on Monday through Thursday (first week of bi-week) and Monday through Friday (second week of bi-week) from 8:30 a.m. to 6:00 p.m..


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne Bost, can be reached on (703) 305-4778. The fax phone number for this Group is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4700, or call Group customer service at (703) 306-0377.

EUSEO RAMOS-FELICIANO
PATENT EXAMINER

ERF/erf

August 9, 2003.


DWAYNE BOST
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600